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A N

INAUGURAL DISSERTATION

O N

CYNANCHE TRACHEALIS.

—
BY THOMPSON M'DONALD,

OF VIRGINIA,

—
HONORARY MEMBER OF THE PHILADELPHIA
MEDICAL SOCIETY.



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A N

INAUGURAL DISSERTATION

FOR THE DEGREE OF

DOCTOR OF MEDICINE;

SUBMITTED TO THE EXAMINATION OF THE

REVEREND JOHN EWING, S. S. T. P. PROVOST,

THE TRUSTEES AND MEDICAL FACULTY

OF THE

University of Pennsylvania:

ON THE 27th DAY OF MAY, 1802.

TO

MR. ALFRED THRUSTON.

WHILST dedications are generally the vehicles of supplication, for protection to a work, or a channel through which the courteous author pours forth adulation to his patron, far more disinterested motives induce me thus to dedicate my inaugural dissertation to you. I hope you will consider it as a mark of that friendship which commenced between us almost in infancy, and increased as we grew up to manhood. Bred up as you and I have been in the same schools, and under the same tutors, partakers of each others' toils and amusements; I do not know to whom I could with so much propriety pay this tribute of esteem as to yourself.

WITH my most cordial wish for your general welfare, and particularly for success in your profession, I subscribe myself,

Your Friend and Servant,

THOMPSON M'DONALD.

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and of other associated species. The birds and bats were collected from the same areas as the mammals. A number of small mammals were collected from the same areas as the birds and bats. The data were collected from a number of sources and are summarized below. The data are presented in a number of ways, including a number of graphs and tables. The data are presented in a number of ways, including a number of graphs and tables.

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INTRODUCTION.

IN thus subjecting myself to the criticisms of the world, I hope it will be recollect'd by the gentle reader, that it is not the result of my choice : far from it, I would rather glide through the process of graduation in obscurity, than subject myself to the flurs of the disingenuous, did not the laws of the University oblige me to come forward with an inaugural dissertation. As a duty then, (however disagreeable) I enter on the task, and the consideration of its being compulsory, will, in a great measure, apologise for its imperfections.

IN choosing the Cynanche Trachealis for the subject of my dissertation, I must confess it was more for my own convenience, than from a conviction of the importance of the subject : had circumstances permitted, I certainly should have selected something of more importance to the medical reader.

ON examining the different authors who have treated of this disease, I find there is considerable variety in their opinions ; some considering it as a topical disease, whilst others consider it as uniformly connected with fever. In the following dissertation I shall consider the disease as consisting of two species, inflammatory, and spasmodic : I think I am warranted in this division, not only from the authority of some respectable authors, but also from my own experience.

DISSSERTATION

On the Cynanche Trachealis.

THREE are few diseases that have received a greater variety of names, than the one now under consideration: almost every author who has written on the subject, has thought himself privileged to give it what appellation appeared to him most proper. I have chosen the term *Cynanche Trachealis*, not that I have a predilection for one term more than an other; but because the professor of the institutes, and practice of medicine in this University, has made use of the term in his inquiries and observations, and for the same reason he has there assigned for his making use of the term (*viz.*) that it included both the inflammatory and spasmodic species.

THE *Cynanche Trachealis* was thought by those authors who first treated of the disease, to be confined entirely to the state of infancy; but late and melancholy experience disqualifies the supposition. The death of the late General Washington will ever remain a memento to the American physician, that age is not a barrier to the ravages of this disease: by it, at the advanced age of sixty eight, that ever-reverenced personage was carried off the stage of life in the most excruciating torment.

WHILST the deplorable case just stated, (without adverting to numerous others on record) establishes the

fact, that the adult occasionally falls a sacrifice to the disease; I need scarcely offer an instance of its taking place in infancy; for who has not almost every month in the year seen, or heard of, instances of that tender but innocent part of the creation falling victims to this most formidable malady? Nay, contrary to the assertions of authors, I have seen it take place whilst the infant was at the breast, and within six months after birth. From all the information that I can collect, I suppose that there is at least ninety nine cases of this disease in infancy, to one that takes place in the adult state.

THIS disease takes place at all seasons of the year; and in all situations. I believe that the Cynanche Trachealis is to be met with more frequently in the spring, and autumn (as other inflammatory diseases are) than the more uniform seasons of summer and winter: but this by no means holds good as a general rule. And although it is to be met with frequently in situations the most healthy, I have every reason to believe, from the concurring testimony of all authors, that certain situations influenced by proximity to lakes, marshes, rivers, the sea, &c. may predispose the system to this disease more than others. Cities, by rendering the systems of children more effeminate, may be considered in the same point of view as the causes above enumerated.

IT is observed by writers on the Cynanche Trachealis, that those children of strong robust constitutions, and sprightly dispositions, are more frequently the victims of this disease, than children whose constitutions are the reverse of this. How true this remark may be, I cannot take upon me to say, but I am confident it by no means holds good as a general rule; for I have seen the disease rage with peculiar violence, in children of very delicate

habits of body. Perhaps it may appear from attentive observation, that the inflammatory species seizes on the robust, and sprightly; whilst the more delicate are subject to the spasmodic species.

THE Cynanche Trachealis has been supposed by some physicians of the highest respectability, to be contagious; amongst the rest is the famous Swedish physician, Rosonslein, whose authority certainly stands high in the practice of medicine; and whose opinions ought to have great weight: but as other authors of equal respectability are silent as to the contagious nature of the Cynanche Trachealis; and as I can very easily conceive of a great number of persons being attacked by the disease, in a certain compass; or its even being epidemic without being contagious, I therefore reject contagion altogether: for I can as easily conceive of contagion in pleurisy, or tetanus, as in Cynanche Trachealis; one species being a fever with a local determination, the other a spasmodic affection of the muscles of the glottis.

I HAVE already hinted that I conceived there was two species of Cynanche Trachealis (*viz.*) Inflammatory and Spasmodic: 1st. the Inflammatory Cynanche Trachealis I consider as a state of fever, with a local inflammation of the Trachea: 2nd. the spasmodic species I consider as an affection of the muscles of the larynx: this I think will more evidently appear by attending to the following phenomena. In the first, or inflammatory Cynanche Trachealis, the disease commences frequently in the day time, the symptoms are not violent at first, but increase gradually for a day or two, and during that time there is no intermissions, or if any, they are very slight: a hoarse sounding voice, with difficulty of breathing, and a fever always attending from the beginning.

IN the spasmodic species the symptoms come on suddenly, in the most alarming manner, and attack most frequently in the night, and without fever. In this species we have frequent intermissions which continue for some time, even for hours, or days, and then the disease returns with as much violence as ever: and what puts it beyond a doubt in my mind that this disease sometimes depends on spasm, is, its being removed so suddenly by antispasmodic remedies; such as the warm bath, the fetid gums, and particularly a vomit. If the disease depended at all times on inflammation it would be impossible for those remedies, in such a short time, to give complete relief. In a girl of twelve years of age, who was threatened with immediate death from suffocation; I saw the disease completely relieved in five minutes, by a simple dose of Tar. Emet. Add to this the testimony of dissections wherein no inflammation existed; nor that invariable effect of inflammation of the Trachea, was to be found: I mean the membrane always present in the inflammatory species.

CONCEIVING it pretty well established that there are two species of Cynanche Trachealis, I go on to consider each more particularly, and in the first place I shall consider the Cynanche Trachealis attended with inflammation: and here I may caution the young, and inexperienced physician to guard against the insidious approaches of the disease: for in the first place the symptoms are but slight, chiefly those attending a common catarrh; such as slight chills, accompanied with heat. The patient (if a child) becomes drowsy, deserts his sportive amusements, and is fretful: at length there is a hoarseness, attended with a dry cough, and difficulty of breathing, which commences sometimes sooner, sometimes later. On examination

of the pulse we find it full, and frequent; the difficulty of breathing increases, the eyes are dull, the face flushed, and sometimes of a full livid appearance, owing, I suppose, to the obstruction to the passage of the blood through the lungs: there is a peculiar sound of the voice in this disease, compared by different authors to the crowing of a cock, the barking of a small dog, or fox, etc. I do not know that any of these comparisons are strictly just; but a person who has once heard the sound, can never be deceived afterwards. Thus this formidable malady proceeds: the difficulty of breathing increases, with violent action of the muscles of the thorax, and abdomen: towards the latter end of the disease the patient becomes drowsy, but is prevented from sleep by the difficulty of breathing: the system is exhausted, the pulse is small, quick, and frequent; at length it becomes tremulous: and frequently convulsions which evidently appear to proceed from strangulation, rid the unhappy sufferer of all its pains, and it sinks to repose in the arms of death.

SUCH is the fatal catastrophe frequently attending this disease, if not counteracted in due time by the most powerful remedies: but unhappily the subjects of the complaint are for the most part too young to describe their disease: and parents, and nurses, are too ignorant to detect it, until it is too late to apply those remedies which experience, and sound principles, have pointed out as the most successful.

THIS disease sometimes proves fatal in four-and-twenty hours: but more frequently death does not take place till the second, or third day: and sometimes it is protracted to the fifth day.

WHERE death takes place in this species of Cynanche Trachealis, it is proven by dissection to proceed from a membrane formed by coagulable lymph, as some suppose; or inspissated mucus, as others suppose. I believe that either one, or the other, is capable of being formed into such a membrane: but from the similarity of the membrane to the productions formed by inflammations in other cavities of the body, I am induced to attribute it to coagulable lymph, poured out from the inflamed surface of the proper membrane lining the trachea. This preternatural membrane is supposed to effect its baneful purpose simply by filling up the cavity of the trachea; and thus obstructing the passage of the air to the lungs. But upon a closer view of the subject I think it will appear, that even in this species of Cynanche Trachealis, death is effected at last by a spasm of the muscles of the glottis: from all the accounts that I have seen of dissections it appears that there was always room enough for the passage of the air through the membrane forming a hollow tube. The mere inspection of a preparation of the trachea, will convince any one that a tube much smaller than the trachea will admit more air than can pass through the rima glottidis. From these considerations I am led to conclude, that the preternatural membrane in the trachea acts as an extraneous substance, throws the muscles of the glottis into spasmodic contraction, closes effectually the rima glottidis, and suffocation takes place.

DIAGNOSIS.

IN the diagnosis it is of the greatest importance to distinguish this disease from catarrh, as it is with this last that it is chiefly confounded, to the great danger and detriment of the patient; for frequently whilst the unwary parents are nursing their tender offspring (as they imagine

for a slight cold) the fatal moment passes, when medicines can no longer be of service; and the child falls a victim to the disease for the want of timely assistance.

By attention, however, it may be distinguished from catarrh, by the absence of sneezing, and no defluxions taking place from the eyes, and nose; and when the disease advances a little farther, by the stridulous sound of the voice: but when the disease continues for some time, every doubt is removed.

IT may be distinguished from the hooping cough by this last being contagious, and in the intermissions of coughing there is no difficulty of breathing, and no stridulous sound of the voice.

IT may be distinguished from all the diseases of the fauces, by inspection: for the Cynanche Trachealis shews no swelling, or inflammation of the fauces, nor a difficulty of swallowing.

THE proximate and remote causes of this species of Cynanche Trachealis are the same, as the remote and proximate causes of fever: therefore I do not think it necessary for me to specify them here, particularly as I do not conceive, that by so doing, I should contribute, in any degree, to throw light on the mode of treating the disease.

PROGNOSIS.

IN forming a prognosis in the Cynanche Trachealis the physician, (as indeed in most acute diseases) should be very cautious, as it frequently happens that the most experienced are deceived as to the issue of the disease: and as nothing subjects the profession so much to ridicule as wrong prognosis, questions relating to the issue of the disease should always be evaded: but if he is determined to risque his reputation he must inquire the length of time

the person has been unwell, the violence with which the disease commenced, &c.

If the disease came on by degrees, and it has continued for some time ; and if a stridulous sound of the voice in respiration attends, we may apprehend danger : as it is then to be presumed that the membrane is already formed, and of course requires the immediate application of the most powerful remedies.

BUT where there is expectoration by coughing, and particularly where the fever, and other symptoms give way to the medicines which are to be pointed out hereafter, the prognostic will always be more favourable. I should never give an unfavourable prognostic in this disease, unless the most alarming symptoms were present ; such as quick, short, and difficult respiration ; tremulous pulse, cold extremities, convulsions, &c.

CURE.

IN attempting the cure of the Inflammatory Cynanche Trachealis, our attention should be directed : 1st. To the disease of the whole system : and, 2ndly, To the local affection of the Trachea. To answer the first intention, the most powerful remedy that presents itself is :

1st. Blood-letting. Blood should be drawn very copiously from the arm. All authors agree in the propriety of this remedy : but late experience in this city points it out as the only remedy that should be depended on in the early part of the disease. But it is to be presumed that, after the inflammation of the Trachea has relieved itself by effusion, this remedy can no longer be serviceable. It is impossible to point out the quantity of blood that should be drawn ; but the constitution, and age of the patient, the violence of the disease, and the

inflammatory diathesis existing in the system, should be attended to, and blood drawn accordingly.

2ndly, Purging. This as an antiphlogistic remedy is of the greatest importance. Calomel, as directed by Dr. Rush, is most to be depended on.

Vomiting has been found an efficacious remedy in this disease; given on the first attack, it acts as an expectorant, clears the Trachea of the phlegm and mucus, which so much abound in children, in this disease; and after the membrane has been formed, it has been discharged by the violent efforts in vomiting.

WHILST those medicines are chiefly to be depended on, the cure is by no means to be entrusted to them entirely: but topical remedies should be prescribed with the greatest assiduity; and first, blood should be drawn from the part affected, by leeches. If the disease is violent, and the inflammatory diathesis great, five or six leeches may be applied to the Trachea, and repeated if necessary.

BLISTERS, particularly if we cannot apply leeches, should be prescribed; and I am of opinion they are much to be depended on. They should be applied immediately on the trachea, or between the shoulders.

IF the disease has advanced, and there is reason to believe there is a membrane formed, mercurial ointment rubbed on the external part of the throat, probably would be of service in loosening it, and preparing it for expulsion by other remedies.

BREATHING the vapour of warm water, impregnated with vinegar, I think, bids fair for being an useful remedy; it promotes expectoration powerfully.

THE remedies above recommended should be applied with promptness, as soon as it is determined that the dis-

ease exists ; and continued with assiduity until the cure is accomplished. But should the time have elapsed when these remedies might have been useful, and the dreadful membrane is already formed, our chief dependence is to be placed in the Seneca root, as recommended by Dr. Archer. It is a difficult matter to determine how this medicine acts ; but as the same effect has been experienced from other medicines that act by their emetic and expectorant qualities ; and as this medicine appears to be powerfully emetic and expectorant, as well as diaphoretic, I am disposed to attribute the good effects arising from it, to the combined effects of the operation of the medicine. For I can very easily conceive, that, in a violent effort of vomiting, and coughing, the air may be so forcibly driven through the Trachea as to carry the membrane with it. It is presumable that in this process the membrane is made loose, by a moisture being poured out from the exhalants of the proper membrane of the Trachea.

I SHALL now in a few words say what appears to me to be the nature of the

SPASMODIC CYNANCHE TRACHEALIS:

and in this species we discover no fever at all at first ; but the patient is suddenly attacked, sometimes in the day time, but more frequently at night, whilst under the balmy influence of sleep. Children frequently after going to bed in perfect health, are attacked two or three hours after falling asleep, with a most violent difficulty of breathing, with a sense of suffocation. The fright which children are thrown into, by being thus suddenly attacked, increases the complaint, by the violent exertions they make to relieve themselves. In this species of Cynanche Trachealis there are intermissions for hours, or days, and then the disease will return as suddenly, and as violently as at first : and unless the child is relieved

by coughing, vomiting, or purging, the patient will die in the paroxysm. This is a description of the disease as it usually appears: but Doctor Underwood, in his Treatise on the Diseases of Children, mentions a chronic Cynanche Trachealis, which he supposes to depend on spasm; but with due submission to the Doctor's greater experience and judgment, I would rather suppose it belonged to the inflammatory species. My reasons are as follow. 1st, It comes on gradually with a difficulty of breathing, and an expectoration of small bits of inspissated mucus, or coagulable lymph.

2ndly, It is most troublesome in the season of the year when other inflammatory diseases take place; and

3dly, It is not attended with those intermissions that I have observed to take place in the spasmodic species, though in those chronic cases there are remissions of the complaint at times. I am induced to believe, that in Cynanche Trachealis, depending purely on spasm, there is no membrane formed at all.

I KNEW a case of a lady, who, for several winters successively, was attacked with those symptoms that are described by authors in the chronic Cynanche Trachealis: such as hoarseness, a difficulty of breathing; and every morning, in the winter season, she expectorated a piece of tough inspissated mucus, or phlegm, which relieved her difficulty of breathing. In this case antispasmodic medicines were given without advantage, but the complaint always went off at the return of spring.

DIAGNOSIS.

THE diagnosis of this species of Cynanche Trachealis, is not, I think, difficult: the symptoms come on violently, and suddenly; and there is scarcely ever any fever present. There is a symptom that takes place in this disease, which, I think, is more frequent in this species, than the other: I mean an eruption of little red dots,

all over the body, which generally relieves the patient. That this symptom is confined to this species, I do not take upon me to say, but I am sure I have seen it oftener in this than the inflammatory species.

CURE.

IN the cure of the spasmodic *Cynanche Trachealis*, the treatment is considerably different from that of the inflammatory species. I have generally seen the cure begun with a vomit; in slight cases this will frequently remove the complaint, and will always moderate the symptoms.

THE warm bath has been found, by experience, to be of infinite service in this species of *Cynanche Trachealis*. The patient should be immersed in the bath, and continued for some time; but not so long as to relax the system too much.

ASSAFETIDA, and opium, have also been found powerful remedies in this disease, particularly the former. Doctor Underwood seems to have placed particular confidence in it. These medicines should be given in tincture, as in that manner they are most conveniently given to children, and are more quick in their operation. The assafetida has the advantage of combining a laxative, with its antispasmodic operation.

MERCURY given so as to impregnate the system, should be attempted, and if successfully, we have every thing to expect from it. There is perhaps no medicine better calculated to equalise the excitability of the system, than this. Mercurial ointment rubbed externally on the throat, should not be neglected; and the vapour of warm water, slightly impregnated with vinegar, should be inhaled.

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